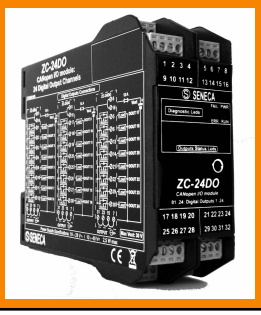
EN

ZC - 24DO

CANopen I/O Module
24 Digital Output

User Manual



Contents:

Features
PDOs
PDO Transmission Type
Emergency Message
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Object Dictionary

PDOs MAPPING

OBJECTS FOR DEFAULT MAPPING				
PDO NR	COB-ID	MAPPED OBJECTS	INDEX	SUBINDEX
RPDO 1	0x200 + NodeId	Digital Output [1..8]	0x6200	1
		Digital Output [9..16]	0x6200	2
		Digital Output [17..24]	0x6200	3

FEATURES

TECHNICAL DATA	
Baud rate	20, 50, 125, 250, 500, 800, 1000 Kbits/s
Typical ON/OFF delay	1.25 ms
CANopen TECHNICAL DATA	
NMT	SLAVE
ERROR CONTROL	NODE GUARDING
NODE ID	HW SWITCH OR SOFTWARE
NUMBER OF PDO	1 RX
PDO MODES	Event Triggered, Sync (cyclic), Sync (acyclic)
PDO MAPPING	VARIABLE
PDO LINKING	SUPPORTED
NUMBER OF SDO	1 SERVER
ERROR MESSAGE	YES
SUPPORTED APPLICATION LAYER	CiA 301 v4.02
SUPPORTED PROFILE	CiA 401 v2.01

PDO TRANSMISSIONS TYPE SUPPORTED

OBJECT VALUE 0x180x sub 2	TRANSMISSION TYPE
0	Synchronous - acyclic
From 1 to 240	Synchronous - cyclic
255	Asynchronous

EMERGENCY MESSAGE

The Emergency message is composed by:
2 bytes of EEC (Emergency Error Code)
1 byte of ER (Error register)
4 bytes of MEF (Manufacturer Error Filed Object 0x1002)

EMERGENCY MESSAGE						
BYTE 0	BYTE 1	**BYTE 2**	BYTE 3	BYTE 4	**BYTE 5**	BYTE 6
EEC		ER	**MEF**			

EEC (Emergency Error Code)	
CODE	DESCRIPTION
0x0000	No Error
0x1000	Generic error
0x4201	CPU Temperature over T_HIGH_HIGH
0x4202	CPU Temperature over T_HIGH
0x4203	CPU Temperature under T_LOW
0x8110	Communication Can Overrun
0x8120	Error Passive
0x8130	Life Guard Error
0x8140	Recovered From Bus Off
0xFF20	CPU Error
0xFF30	Vext For outputs not found / SPI Communication Error
0xFF50	Output Fail

ER (Error Register)							
BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT1	BIT 0
Generic	0	0	Temperature	Communication	0	0	Manifacture

Where if the bit is 0 means no error

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MANUFACTURER SPECIFIC PROFILE AREA

OBJECT 0x2001 NODE ADDRESS

If Hardware switches are in "from memory" mode the node address is selectable by object 0x2001.

NODE ADDRESS (Object 0x2001)	
OBJECT VALUE	DESCRIPTION
0..127	Node Address

OBJECT 0x2002 Baud Rate

If Hardware switches are in "from memory" mode the baud rate is selectable by object 0x2002.

BAUD RATE (Object 0x2002)	
OBJECT VALUE	DESCRIPTION
1	20 Kbit/s
2	50 Kbit/s
3	125 Kbit/s
4	250 Kbit/s
5	500 Kbit/s
6	800 Kbit/s
7	1 Mbit/s

OBJECT 0x2030 CPU TEMPERATURE

Object can be used for monitoring the CPU temperature. The HOT STOP Temperature sends in pre-operational the station.

The HOT ERROR and the COLD ERROR Temperature sends the Emergency Object.

The Object is Read Only.

CPU TEMPERATURE (Object 0x2030)	
SUBINDEX	DESCRIPTION
1	Actual Temperature [°C/10]
2	Temperature for HOT STOP ERROR [°C/10] 95.0°C
3	Temperature for HOT ERROR [°C/10] 90.0°C
4	Temperature for COLD ERROR [°C/10] -25.0°C

OBJECT 0x2520 OUTPUT STATUS

Object can be used for monitoring the outputs status:
"1" = Output status ERROR
"0" = Output status OK

OUTPUT STATUS (Object 0x2520)	
SUBINDEX	DESCRIPTION
1	OUTPUT [1..8] STATUS
2	OUTPUT [9..16] STATUS
3	OUTPUT [17..24] STATUS

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LED DESCRIPTION

SERVICE LED DESCRIPTION		
LED	**STATE**	**DESCRIPTION**
RUN	BLINKING	Pre-operational mode
	SINGLE FLASH	Stop mode
	ON	Operational mode
ERROR	SINGLE FLASH	At least one error counter has reached or exceeded the warning level
	DOUBLE FLASH	Guard Event
	TRIPLE FLASH	The SYNC hasn't received within the configurated communication cycle time out period
	ON	The Can controller is BUS OFF
	OFF	No error
FAIL	ON/BLINKING	No Vext Found / Data receiving
POWER	ON	Power Supply

INPUT/OUTPUT LED DESCRIPTION		
LED	**STATE**	**DESCRIPTION**
1..8	ON	Output [1..8] is high
	OFF	Ouput [1..8] is low
9..16	ON	Output [9..16] is high
	OFF	Ouput [9..16] is low
17..24	ON	Output [17..24] is high
	OFF	Ouput [17..24] is low

DIP SWITCH CONFIGURATION

DIP-SWITCH SETTINGS
(CANopen PROTOCOL)

KEY

BAUD RATE		ADDRESS		
1 2 3	SOFTWARE PROGRAMMED	4 5 6 7 8 9 10		SOFTWARE PROGRAMMED
	20 kbps		0000001	ADD. 001
	50 kbps		0000010	ADD. 002
	125 kbps		0000011	ADD. 003
	250 kbps		0000100	ADD. 004
	500 kbps		0000101	ADD. 005
	800 kbps	.....	.....	.....
	1 Mbps		1111111	ADD. 127

DIGITAL OUTPUT MANAGEMENT

OBJECT 0x6200
8 BIT OUTPUT

8 BIT OUTPUT (Object 0x6200)	
SUBINDEX	DESCRIPTION
1	OUTPUT [1..8] VALUE
2	OUTPUT [9..16] VALUE
3	OUTPUT [17..24] VALUE

OBJECT 0x6206
ERROR MODE OUTPUT

ERROR MODE OUTPUT (Object 0x6206)	
SUBINDEX	DESCRIPTION
1	OUTPUT [1..8] ERROR MODE
2	OUTPUT [9..16] ERROR MODE
3	OUTPUT [17..24] ERROR MODE

In Error:
0 = the output keeps the last value
1 = the output is loaded with object 0x6207

OBJECT 0x6207
ERROR VALUE OUTPUT

ERROR VALUE OUTPUT (Object 0x6207)	
SUBINDEX	DESCRIPTION
1	OUTPUT [1..8] ERROR VALUE
2	OUTPUT [9..16] ERROR VALUE
3	OUTPUT [17..24] ERROR VALUE

The object stores the outputs values to load in fault case (only if the Error mode output corresponding bit value is "1").

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OBJECT 0x6220
SINGLE BIT OUTPUT

ERROR VALUE OUTPUT (Object 0x6220)	
SUBINDEX	DESCRIPTION
1	OUTPUT 1 VALUE
2	OUTPUT 2 VALUE
3	OUTPUT 3 VALUE
4	OUTPUT 4 VALUE
5	OUTPUT 5 VALUE
6	OUTPUT 6 VALUE
7	OUTPUT 7 VALUE
8	OUTPUT 8 VALUE
9	OUTPUT 9 VALUE
10	OUTPUT 10 VALUE
11	OUTPUT 11 VALUE
12	OUTPUT 12 VALUE
13	OUTPUT 13 VALUE
14	OUTPUT 14 VALUE
15	OUTPUT 15 VALUE
16	OUTPUT 16 VALUE
17	OUTPUT 17 VALUE
18	OUTPUT 18 VALUE
19	OUTPUT 19 VALUE
20	OUTPUT 20 VALUE
21	OUTPUT 21 VALUE
22	OUTPUT 22 VALUE
23	OUTPUT 23 VALUE
24	OUTPUT 24 VALUE

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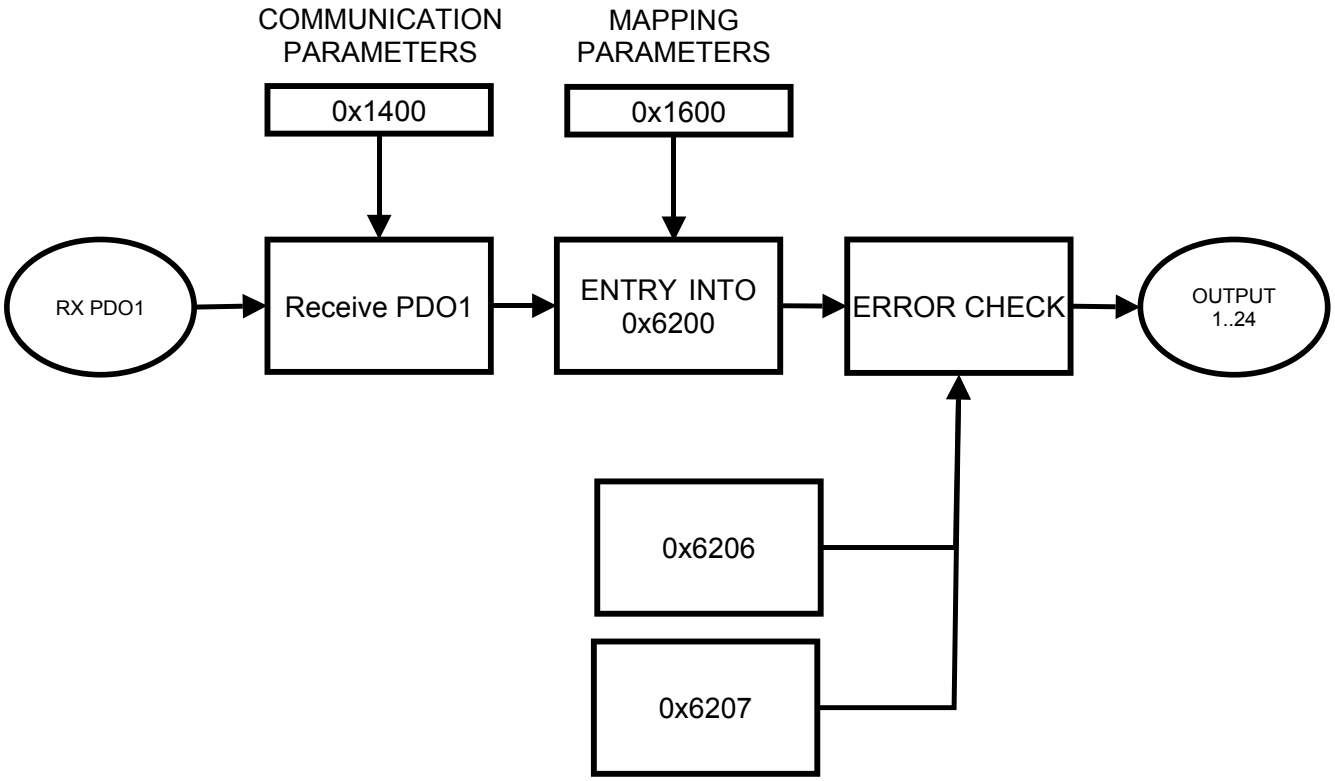
FUNCTIONAL DIAGRAM
DIGITAL OUTPUT



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OBJECT DICTIONARY

COMMUNICATION PROFILE AREA

INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
0x1000	0	Device Type	Device Type (Profile 401 = 0x191)	UNSIGNED 32	RO	0x00030191
0x1001	0	Error register	Error register (DS 401)	UNSIGNED 8	RO	0
0x1002	0	Manufacturer Status Register	Status Register	UNSIGNED 32	RO	0
0x1005	0	SYNC COB-ID	The device consumes the SYNC message	UNSIGNED 32	RW	0x80
0x1006	0	Communication Window Length	Sync interval [us]	UNSIGNED 32	RW	0
0x1007	0	Synchronous Window Length	Time window [us] for the PDO transmission after the SYNC	UNSIGNED 32	RW	0
0x1008	0	Manufacturer Device name	Device name	VISIBLE STRING	RO	"ZC-24DO"
0x1009	0	Manufacturer Hardware Version	Hardware version	VISIBLE STRING	RO	“SC000000”
0x100A	0	Manufacturer Software Version	Software version	VISIBLE STRING	RO	"SW001170"
0x100C	0	Guard Time	Guard Time [ms]	UNSIGNED 16	RW	0
0x100D	0	Life Time Factor	Max delay between two guarding telegrams = Guard_Time*Life_Time_Factor	UNSIGNED 8	RW	0
0x1010	0	Store Parameters	Max Subindex Number		RO	4
	1	Save All Parameters	Store not volatile parameters (Write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	2	Save Communication Parameters	Store not volatile parameters (Write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	3	Save Application Parameters	Store not volatile parameters (Write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
	4	Save Manufacturer Parameters	Store not volatile parameters (Write in ASCII “save” for store process MSB 0x65766173 LSB)	UNSIGNED 32	RW	1
0x1011	0	Restore Default	Max Subindex Number	UNSIGNED 8	RO	4
	1	Restore All Parameters	Restore not volatile parameters (Write in ASCII “load” for load process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	2	Restore Communication Parameters	Restore not volatile parameters (Write in ASCII “load” for load process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
	3	Restore Application Parameters	Restore not volatile parameters (Write in ASCII “load” for load process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0

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INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
	4	Restore Manufactures Parameters	Restore not volatile parameters (Write in ASCII “load” for load process MSB 0x64616F6C LSB)	UNSIGNED 32	RW	0
0x1014	0	COB-ID Emergency Object	COB-ID for Emergency Object	UNSIGNED 32	RO	NODEID+0x80
0x1018	0	Identity Object	Max Subindex Number	UNSIGNED 8	RO	4
	1	Vendor ID	Seneca srl	UNSIGNED 32	RO	0x00000249
	2	Product Code	ZC-24DO Machine ID Code	UNSIGNED 32	RO	0x00000021
	3	Revision Number	Revision	UNSIGNED 32	RO	0
	4	Serial Number	Serial Number Code	UNSIGNED 32	RO	0
0x1200	0	Server SDO Parameters	Max Subindex Number	UNSIGNED 8	RO	2
	1	Receive SDO COB-ID	COB-ID of Receive SDO	UNSIGNED 32	RO	NODEID + 0x600
	2	Transmit SDO COB-ID	COB-ID of Transmit SDO	UNSIGNED 32	RO	NODEID + 0x580
0x1400	0	Receive PDO1 Communication Parameters	Max Subindex Number	UNSIGNED 8	RO	3
	1	COB-ID	COB-ID of TxPDO1	UNSIGNED 32	RW	NODEID + 0x200
	2	Transmission Type	Transmission Type for RxPDO1 0x00 = Synchronous - acyclic 0x01 to 0xF0 = Synchronous-cyclic 0xFF = Asynchronous	UNSIGNED 8	RW	0xFF
	3	Inhibit Time	Not used in Rx PDO	UNSIGNED 16	RW	0x0000
0x1600	0	Receive PDO1 Communication Parameters	Max Subindex Number	UNSIGNED 8	RO	3
	1	Object NR1	First Object (default:Output 1..8)	UNSIGNED 32	RW	0x62000108 Object = 0x6200 subindex = 1 Length = 8 bit
	2	Object NR2	Second Object (default:Output 9..16)	UNSIGNED 32	RW	0x62000208 Object = 0x6200 subindex = 2 Length = 8 bit
	3	Object NR3	Third Object (default:Output 17..24)	UNSIGNED 32	RW	0x62000308 Object = 0x6200 subindex = 3 Length = 8 bit

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MANUFACTURER SPECIFIC PROFILE AREA

INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
0x2001	0	Module Address	Station Address (only if dip switch 4,5,6,7,8,9,10 are OFF)	UNSIGNED 8	RW	127
0x2002	0	Buad Rate	Station Baud Rate (only if dip switch 1,2,3 are OFF) 1 = 20Kbps 2 = 50Kbps 3 = 125Kbps 4 = 250Kbps 5 = 500Kbps 6 = 800Kbps 7 = 1Mbps	UNSIGNED 8	RW	7
0x2030	0	Device Temperature	Max Subindex Number	UNSIGNED 8	RO	4
	1	Internal Temperatue	Station internal Temperature [°C/10]	INTEGER 16	RO	0
	2	Hi Hi Temperature	Critical Hot Temperature (All operations Stop)[°C/10]	INTEGER 16	RO	950
	3	Hi Temperature	Warning for Too Hot Temperature [°C/10]	INTEGER 16	RO	900
	4	Lo Temperature	Critical Low Temperature (All operations Stop)[°C/10]	INTEGER 16	RO	-250
0x2051	0	CPU Command	Command to execute Supported commands are: 0x5C0n Force preset for counter n 0x5D0n Force counter n reset 0x5E0n Force overflow for counter n	UNSIGNED 16	RW	0
0x2052	0	Aux Command	Reserved	UNSIGNED 16	RW	0
0x2520	0	Outputs Status	Max Subindex Number	UNSIGNED 8	RO	3
	1	Output [1..8] Status	1 = Output status ERROR 0 = Output status OK	UNSIGNED 8	RO	0
	2	Output [9..16] Status	1 = Output status ERROR 0 = Output status OK	UNSIGNED 8	RO	0
	3	Output [17..24] Status	1 = Output status ERROR 0 = Output status OK	UNSIGNED 8	RO	0
0x2521	0	Output Fail type	Max Subindex Number	UNSIGNED 8	RO	3
	1	Fail Type Output [1..8]	Reserved	UNSIGNED 8	RO	0
	2	Fail Type Output [9..16]	Reserved	UNSIGNED 8	RO	0
	3	Fail Type Output [17..24]	Reserved	UNSIGNED 8	RO	0

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INDEX	SUB INDEX	NAME	DESCRIPTION	TYPE	ACCESS	DEFAULT
0x6200	0	8 bit Output	Max Subindex Number	UNSIGNED 8	RO	1
	1	Output 1..8 Value	Output value	UNSIGNED 8	RW	0
	2	Output 9..16 Value	Output value	UNSIGNED 8	RW	0
	3	Output 17..24 Value	Output value	UNSIGNED 8	RW	0
0x6206	0	Error Mode Output	Max Subindex Number	UNSIGNED 8	RO	1
	1	Error Mode Output [1..8]	“1” = Load 0x6207 value “0” = Keep last	UNSIGNED 8	RW	0xFF
	2	Error Mode Output [9..16]	“1” = Load 0x6207 value “0” = Keep last	UNSIGNED 8	RW	0xFF
	3	Error Mode Output [17..24]	“1” = Load 0x6207 value “0” = Keep last	UNSIGNED 8	RW	0xFF
0x6207	0	Error Value Output	Max Subindex Number	UNSIGNED 8	RO	1
	1	Error value Output [1..8]	Value to Load in fail case	UNSIGNED 8	RW	0x00
	2	Error value Output [9..16]	Value to Load in fail case	UNSIGNED 8	RW	0x00
	3	Error value Output [17..24]	Value to Load in fail case	UNSIGNED 8	RW	0x00
0x6220	0	Single Bit Output	Max Subindex Number	UNSIGNED 8	RO	8
	1	Output 1 Value	Output 1	BOOLEAN	RW	0
	2	Output 2 Value	Output 2	BOOLEAN	RW	0
	3	Output 3 Value	Output 3	BOOLEAN	RW	0
	4	Output 4 Value	Output 4	BOOLEAN	RW	0
	5	Output 5 Value	Output 5	BOOLEAN	RW	0
	6	Output 6 Value	Output 6	BOOLEAN	RW	0
	7	Output 7 Value	Output 7	BOOLEAN	RW	0
	8	Output 8 Value	Output 8	BOOLEAN	RW	0
	9	Output 9 Value	Output 9	BOOLEAN	RW	0
	10	Output 10 Value	Output 10	BOOLEAN	RW	0
	11	Output 11 Value	Output 11	BOOLEAN	RW	0
	12	Output 12 Value	Output 12	BOOLEAN	RW	0
	13	Output 13 Value	Output 13	BOOLEAN	RW	0
	14	Output 14 Value	Output 14	BOOLEAN	RW	0
	15	Output 15 Value	Output 15	BOOLEAN	RW	0
	16	Output 16 Value	Output 16	BOOLEAN	RW	0
	17	Output 17 Value	Output 17	BOOLEAN	RW	0
	18	Output 18 Value	Output 18	BOOLEAN	RW	0
	19	Output 19 Value	Output 19	BOOLEAN	RW	0
	20	Output 20 Value	Output 20	BOOLEAN	RW	0
	21	Output 21 Value	Output 21	BOOLEAN	RW	0
	22	Output 22 Value	Output 22	BOOLEAN	RW	0
	23	Output 23 Value	Output 23	BOOLEAN	RW	0
	24	Output 24 Value	Output 24	BOOLEAN	RW	0

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